

US-PAT-NO: 6384839

DOCUMENT-IDENTIFIER: US 6384839 B1

TITLE: Method and apparatus for
rendering sub-pixel
anti-aliased graphics on
stripe topology color displays

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INVENTOR-INFORMATION:

| NAME | CITY | |
|----------------------|-------------|---------|
| STATE | ZIP CODE | COUNTRY |
| Paul; Steven William | Belchertown | |
| MA | N/A | N/A |

US-CL-CURRENT: 345/613

ABSTRACT:

An anti-aliasing method and apparatus for use with a stripe topology color display provides sub-pixel level smoothing in a manner which enhances the apparent resolution of the display, yielding enhanced object shape and positioning, while maintaining accurate foreground and background colors. The method or apparatus includes the steps or means of: generating a 1 bit per pixel super-sampled bitmap for the image, in which there is greater than or equal to 1 bit for each sub-pixel of the image; determining an average intensity I for each position of the image from the bitmap; determining a

sub-pixel intensity S for each sub-pixel using the average intensity I, a foreground intensity F and a background intensity B; and setting a sub-pixel value V for each sub-pixel to produce the sub-pixel intensity on the display.

18 Claims, 16 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

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Abstract Text - ABTX (1):

An anti-aliasing method and apparatus for use with a stripe topology color display provides sub-pixel level smoothing in a manner which enhances the apparent resolution of the display, yielding enhanced object shape and positioning, while maintaining accurate foreground and background colors. The method or apparatus includes the steps or means of: generating a 1 bit per pixel super-sampled bitmap for the image, in which there is greater than or equal to 1 bit for each sub-pixel of the image; determining an average intensity I for each position of the image from the bitmap; determining a sub-pixel intensity S for each sub-pixel using the average intensity I, a foreground intensity F and a background intensity B; and setting a sub-pixel value V for each sub-pixel to produce the sub-pixel intensity on the display.

Brief Summary Text - BSTX (17):

It is an object of the present invention to provide an anti-aliasing method and apparatus for use with a stripe topology color display which provides

sub-pixel level smoothing in a manner which enhances the apparent resolution of the display, yielding enhanced object shape and positioning, while maintaining accurate foreground and background colors.

Detailed Description Text - DETX (3):

To understand the method, first, consider the special case of drawing a black object on a white background. In the case of whole pixel anti-aliasing, a dark object must start and stop on a pixel boundary. However, using

sub-pixel anti-aliasing, we manipulate the sub-pixels individually. Thus, we can start or stop the dark segment at a sub-pixel boundaries, effectively increasing the horizontal resolution by a factor of 3. This results in increased accuracy in displaying the shape and position of an object compared with conventional drawing or pixel based anti-aliasing (compare FIGS. 2b, 3b and 4b). Moreover, the present invention is able to derive similar benefits in the general case of drawing an object in any foreground color, over any background color.

Detailed Description Text - DETX (10):

Steps 64 and 66 are explained in conjunction

with FIGS. 6A-E. Step 64 assigns the sub-pixel intensity S for each sub-pixel based on the intensity of the foreground color F, the intensity of the background color B, and the average intensity I from step 62. The calculation is a linear interpolation:

Patent Assignment Abstract of Title

Total Assignments: 1**Application #:** 09748562 **Filing Dt:** 12/22/2000**Patent #:** NONE**Issue Dt:****PCT #:** NONE**Publication #:** NONE**Pub Dt:****Inventors:** Andrew Blake, Kentaro Toyama**Title:** System and method providing subpixel-edge-offset-based determination of opacity**Assignment: 1**

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ONE MICROSOFT WAY

REDMOND, WASHINGTON 98052

Correspondent: AMIN, ESCHWEILER & TUROCY, LLP
HIMANSHU S. AMIN
24TH FLOOR, NATIONAL CITY CENTER
1900 E. 9TH STREET
CLEVELAND, OHIO 44114

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